Stephen P. Wales Ltd
The Old Brewery Works, Lr Ellacombe Church Rd,
Torquay. UK. TQ1 1JH
Tel: 01803 295430 Fax: 01803 212819
email: sales@stephenpwales.co.uk

CARDtimer
User Manual

CARDtimer User Manual ver 009 2011-04-15.docx

Author:	Steve Heaton
Checker:	Jason Paul
Printing date and time:	15/04/11, 13:00

Contents

Page

1 REVISION RECORD 3

2 INTRODUCTION 4

2.1 GENERAL 4
2.2 EXAMPLE APPLICATIONS: 4
2.3 KEY FEATURES 5
2.4 BUSINESS BENEFITS 5

3 DEFAULT REGISTER VALUES 6

3.1 SETTINGS 6

4 SPECIFICATION 7

4.1 ELECTRICAL 7
4.2 PHYSICAL 7
4.3 TIMING 7
4.4 MISC 7

5 INSTALLATION INSTRUCTIONS 8

5.1 DIMENSIONS 8
5.2 DRILLING TEMPLATE 9

6 CONNECTION 10

6.1 CONNECTION – SINGLE LOAD 10
6.2 CONNECTION – AUXILIARY LOAD (OPTION A) 10

7 PROGRAMMING INSTRUCTIONS 11

7.1 INTRODUCTION 11

8 FIXED REGISTERS 13

8.1 INTRODUCTION 13
8.2 NUMCARDS 13
8.3 REBOOTS 13
8.4 EQUIPTYP 13
8.5 TOTLSEC 14
8.6 TIMECRED 14
8.7 MAXCRED 15
8.8 TIMEWARN 15
8.9 SOUND 15
8.10 TICK 16

9 VARIABLES 17

9.1 INTRODUCTION 17
9.2 EXAMPLE OF CHANGING A REGISTER 17
9.3 COMPLETING PROGRAMMING 19

10 USER INSTRUCTIONS 20

10.1 INTRODUCTION 20

1 REVISION RECORD

Version no.	Revision Date	Reason for Change
004	2011-02-12	First issue for firmware version 11BWR1001 1BS0000
005	2011-03-25	First issue for firmware version ABXR100C ABSC0000
006	2011-04-03	First issue for firmware version ABXR100D ABSC0000
007	2011-04-09	First issue for firmware version ABXR100E ABSC0000
008	2011-04-11	First issue for firmware version ADWR100FADCC
009	2011-04-15	First issue for firmware version ADXR100GADSC
00a	2011-05-15	First issue for firmware version ADXR100JADSC

2 INTRODUCTION

2.1 General

2.1.1 The CARDtimer is ideal for all situations where the duration of electricity usage needs to be controlled, and it is desirable to avoid coin timers with their inherent security, reliability and emptying issues.

2.1.2 The timer owner sells disposable cards to the customer, and sets the timer to provide an appropriate duration of electricity usage for the appliance.

2.1.3 For example, for a sun-bed, the owner may sell the cards to the customers at £3.50, and set the timer to provide 30 minutes of power to the sun-bed.

2.1.4 The cards can be sold in pounds, euros or any other currency.

2.1.5 The standard cards are imprinted “ONE CREDIT”. Other legends are available from your supplier.

2.1.6 Timers with Option A have a second controlled output which stays closed for 5 minutes after the main contact has opened. This may be used for fans or auxiliary lighting.

2.1.7 Custom software applications can often be developed on request.

2.2 Example Applications:

- Gym equipment, Sun-beds, Tanning Booths
- Snooker Table Lights
- Vehicle cleaning – Vacuums, Jet-wash, etc
- Squash Court and Sports Field Lighting
- Washing Machine (operating the water inlet solenoid)
- Gaming Machines (control power to the display)
- Showers (including electric showers up to 25kW)
- Heating (control live supply to gas or oil heating system)
- Hairdryers & Hair Straighteners
- Air-conditioning
- Rented Workshops, Garages, & Premises

2.3 Key Features

- Uses secure disposable magnetic cards
- When card is inserted, time credit is copied from the card to the timer
- Multiple cards may be entered in one session
- Card is erased and permanently marked
- Cardtimer display counts down in hours, minutes and seconds
- User settable duration of 0 to 999,999seconds (0 to 227hrs) per card
- Maximum accumulated time is unlimited
- User friendly 16 character LCD display
- Master Programming Card allows settings to be easily changed
- Switches up to 100A and can supply up to 25kW of load
- Red led clearly indicates the supply contactor is closed
- Optional warning beeper when credit running out
- No battery replacement required – design lifetime 20 years
- Independent of currency
- Landlord Mode (dispenses electricity without charge) for friends and family use

2.4 Business Benefits

2.4.1 Incidental sales resulting during the purchase of cards

2.4.2 Sales are not lost due to consumers not having the correct change

2.4.3 Ability to flexibly change the time and cost per session

2.4.4 No attraction for theft

2.4.5 Better control of cash (no need to periodically empty meters of coins)

3 DEFAULT REGISTER VALUES

3.1 Settings

3.1.1 The CARDtimer has various registers which can be adjusted by the user, depending on the application.

3.1.2 The default values are shown here, together with any adjustments made by your supplier or electrician.

Value	Factory Setting	Adjusted Value
EQUIPTYP text to be displayed alternately with INSERT CARD, when the credit has reached zero	000 [BLANK]	
TIMECRED number of seconds credited for each card inserted	600sec	
MAXCRED number of seconds of credit which can be added by the user	1200s	
TIMEWARN start of warning sound that credit is running out	60sec	
SOUND sound confirmations when keys are pressed, cards are inserted, or the display shows a message	ON	
TICK tick sound each time a second elapses	ON	

4 SPECIFICATION

4.1 Electrical

Voltage Rating	220-250Vac 50Hz
Current rating	100A main contactor 5A auxiliary contactor (option A timers only)
Maximum cable diameter	8mm (main terminals) 3.2mm (auxiliary terminals)

4.2 Physical

Height	171mm
Width	124mm
Depth	92mm
Weight	950g

4.3 Timing

Duration per card (user settable)	1 to 999,999 sec (0 to 277hrs)
Maximum time credit (user settable)	unlimited
Timing accuracy	1%

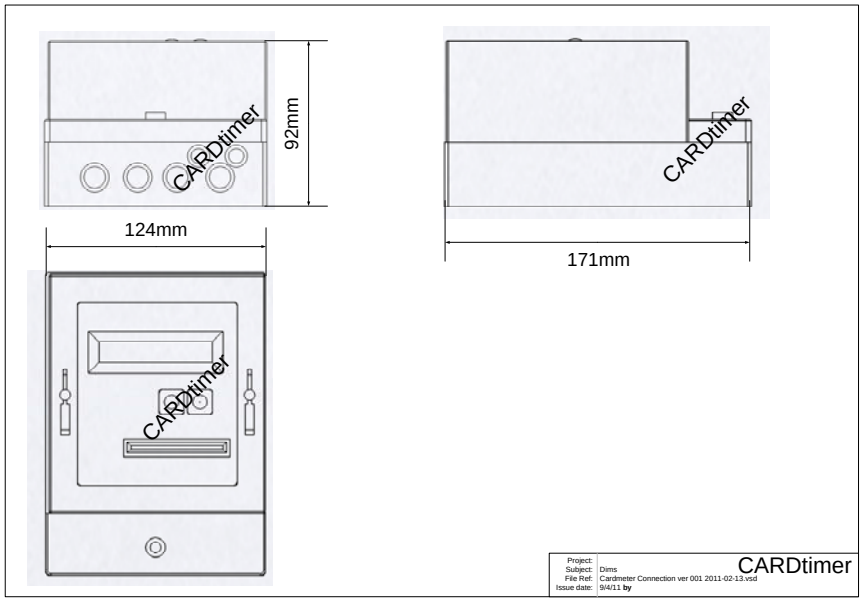
4.4 Misc

Design lifetime	20yrs
IP rating	IP20

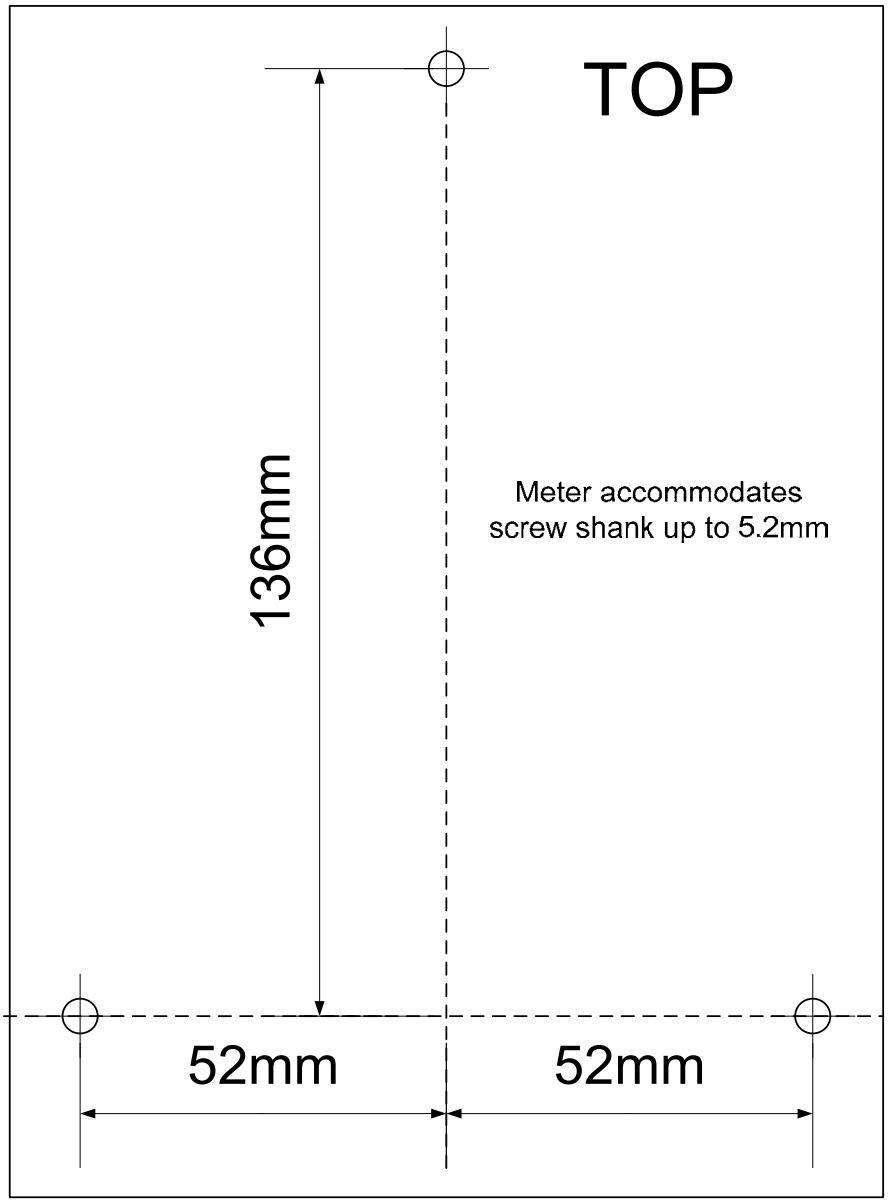
5 INSTALLATION INSTRUCTIONS

5.1 Dimensions

5.1.1 Allow 50mm clear below the timer for wiring connections.



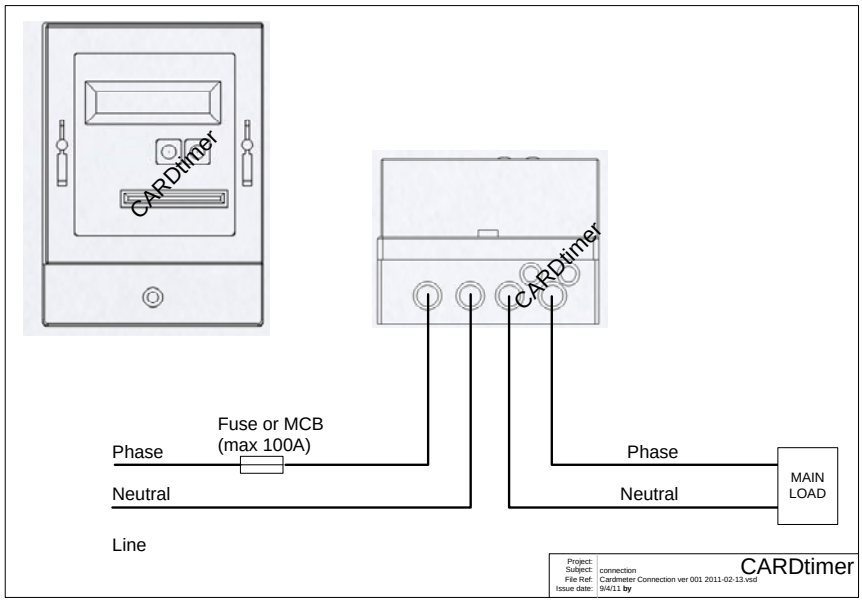
5.2 Drilling Template



6 CONNECTION

6.1 Connection – Single Load

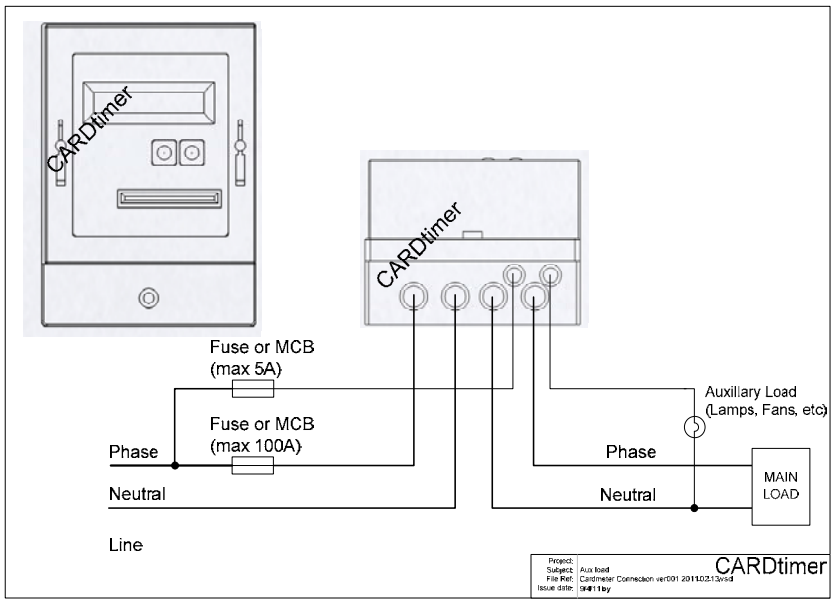
6.1.1 The CARDtimer is able to support a load of up to 100A from the main terminals.



6.2 Connection – Auxiliary Load (Option A)

6.2.1 The CARDtimer is capable of switching an auxiliary load of up to 5A (option A timer only).

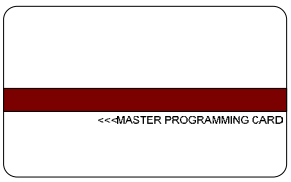
6.2.2 The relay contact within the timer opens 5 minutes after the main contact opens, and is ideal to operate background lamps, fans and so on after the main contact has opened.



7 PROGRAMMING INSTRUCTIONS

7.1 Introduction

7.1.1 The CARDtimer can only be programmed using the **master programming card** originally supplied with the timer (replacements are available from your supplier).



7.1.2 The **master programming card** is inserted in the card slot on the front of the CARDtimer, magnetic strip upwards. This can be done whenever "INSERT CARD" is displayed, or when the timer is running (timer continues to count down in the background during programming).

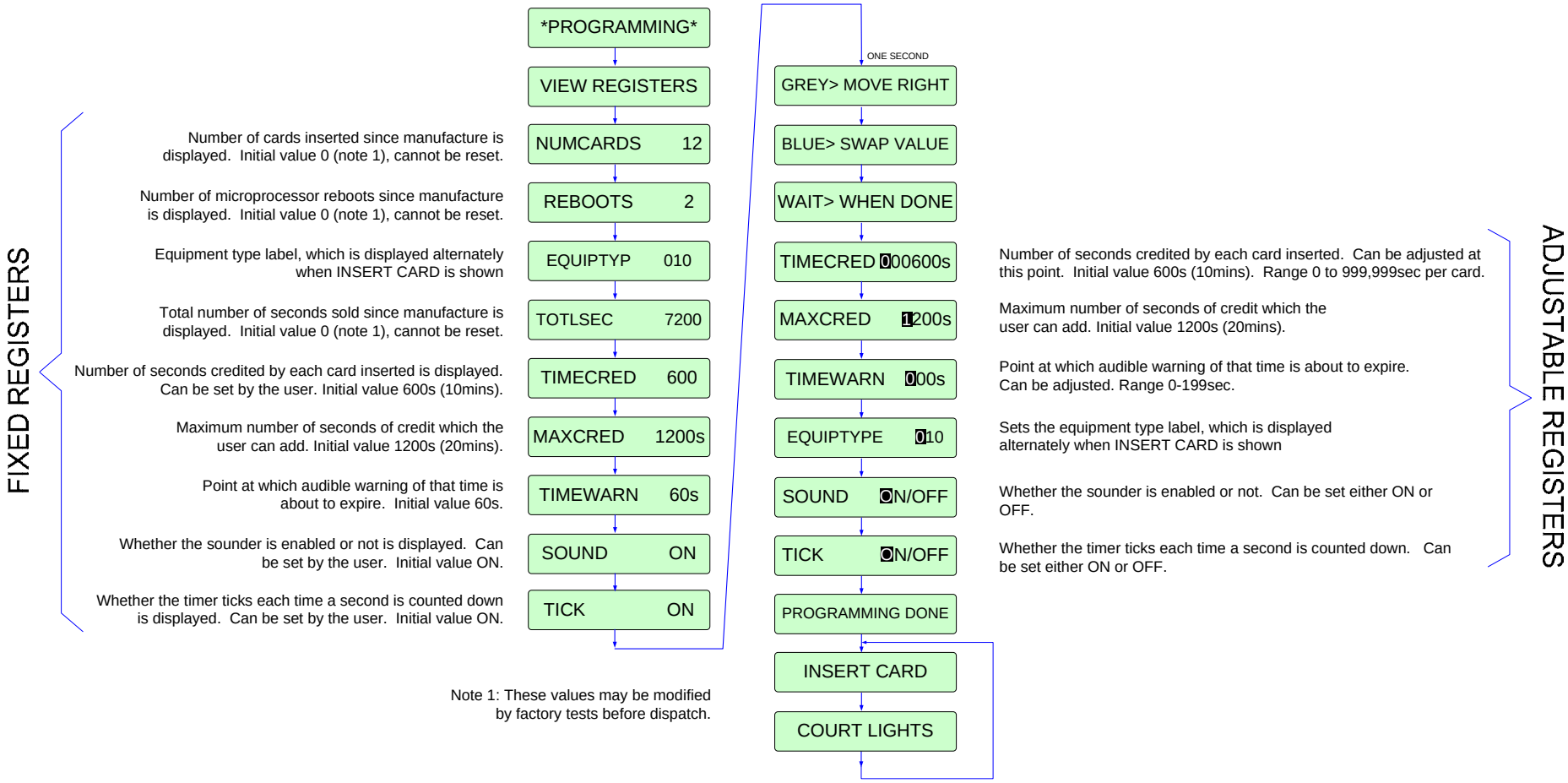
INSERT CARD

7.1.3 The card needs to be inserted in one smooth action. If the card is inserted too fast, or too slowly, then the timer will display "CARD ERROR".

CARD ERROR

7.1.4 If this happens, wait for the timer to display "INSERT CARD" and then try again.

7.1.5 When you have successfully inserted the **master programming card**, the display will show "*PROGRAMMING*", and will cycle through the registers as shown below. The actual values may vary slightly depending on the software version.


FIXED REGISTERS
Number of cards inserted since manufacture is displayed. Initial value 0 (note 1), cannot be reset.
Number of microprocessor reboots since manufacture is displayed. Initial value 0 (note 1), cannot be reset.
Equipment type label, which is displayed alternately when INSERT CARD is shown
Total number of seconds sold since manufacture is displayed. Initial value 0 (note 1), cannot be reset.
Number of seconds credited by each card inserted is displayed. Can be set by the user. Initial value 600s (10mins).
Maximum number of seconds of credit which the user can add. Initial value 1200s (20mins).
Point at which audible warning of that time is about to expire. Initial value 60s.
Whether the sounder is enabled or not is displayed. Can be set by the user. Initial value ON.
Whether the timer ticks each time a second is counted down is displayed. Can be set by the user. Initial value ON.
PROGRAMMING
VIEW REGISTERS
NUMCARDS 12
REBOOTS 2
EQUIPTYP 010
TOTLSEC 7200
TIMECRED 600
MAXCRED 1200s
TIMEWARN 60s
SOUND ON
TICK ON
ONE SECOND
GREY> MOVE RIGHT
BLUE> SWAP VALUE
WAIT> WHEN DONE
TIMECRED 000600s
MAXCRED 1200s
TIMEWARN 000s
EQUIPTYPE 010
SOUND ON/OFF
TICK ON/OFF
PROGRAMMING DONE
INSERT CARD
COURT LIGHTS
Note 1: These values may be modified by factory tests before dispatch.
Number of seconds credited by each card inserted. Can be adjusted at this point. Initial value 600s (10mins). Range 0 to 999,999sec per card.
Maximum number of seconds of credit which the user can add. Initial value 1200s (20mins).
Point at which audible warning of that time is about to expire. Can be adjusted. Range 0-199sec.
Sets the equipment type label, which is displayed alternately when INSERT CARD is shown
Whether the sounder is enabled or not. Can be set either ON or OFF.
Whether the timer ticks each time a second is counted down. Can be set either ON or OFF.
ADJUSTABLE REGISTERS

8 FIXED REGISTERS

8.1 Introduction

8.1.1 Once in programming mode, the CARDtimer will provide information from its internal registers. These registers contain records of various values, some of which are set to zero at the time of timer manufacture. It is not possible to subsequently reset or change these registers, so they provide a true record of the usage of the timer.

8.2 NUMCARDS

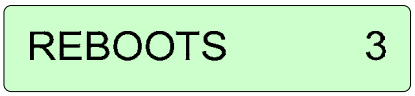
8.2.1 This register records the number of cards successfully used by consumers since the manufacture of the timer and this value will increase by one each time a card is inserted.

8.2.2 This register is set to zero at the time of manufacture and cannot be reset. Note, this value may be modified by factory tests before dispatch.

8.3 REBOOTS

8.3.1 This register records the number of reboots of the microprocessor since the manufacture of the timer. A reboot occurs each time the mains fails. If there are an excessive number of reboots it may indicate that there have been attempts at tampering with the timer.

8.3.2 This register is set to zero at the time of manufacture and cannot be reset. Note, this value may be modified by factory tests before dispatch.

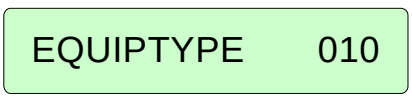


8.3.3 This number should be noted down after installation, and any significant increase investigated.

8.4 EQUIPTYP

8.4.1 This register records the text to be displayed alternately with INSERT CARD, when the credit has reached zero.

8.4.2 This register is set to zero at the time of manufacture and can be altered by the user.



8.4.3 The acceptable values are as follows:

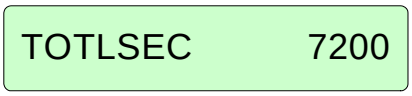
0 No equipment type (ie blank)
1 SUNBED
2 TANNING BOOTH
3 SNOOKER TABLE
4 LIGHTS
5 HEATING
6 HEATER
7 VAC
8 VACUUM
9 POOL LIGHTS
10 COURT LIGHTS
11 SQUASH COURT
12 GAMES MACHINE
13 PITCH LIGHTS
14 WASHING MACHINE
15 TUMBLE DRIER
16 SHOWER
17 HEATING SYSTEM
18 HAIR DRIER
19 HAIR STRAIGHTNERS
20 AIRCON
21 AIRCONDITIONING
22 SHOWER 1
23 SHOWER 2
24 POWER PLATE

25-255 No equipment type (ie blank)

8.5 TOTLSEC

8.5.1 This register records the number of seconds purchased by consumers since the manufacture of the timer. This value will increase by the amount of time purchased by each card when it is inserted.

8.5.2 This register is set to zero at the time of manufacture and cannot be reset. Note, this value may be modified by factory tests before dispatch.



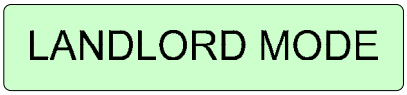
8.6 TIMECRED

8.6.1 This register records the number of seconds credited for each card inserted.

8.6.2 This register is set to 600sec at the time of manufacture.

8.6.3 The value can be changed (see next section).

8.6.4 If TIMECRED is set to zero, the CARDtimer erases any remaining time, and enters LANDLORD MODE. In this mode the meter dispenses electricity without the user needing to enter cards. This mode is ideal for testing purposes, or friends and family.



8.6.5 To return to normal operation, program the TIMECRED register to a value other than zero.

8.7 MAXCRED

8.7.1 This register sets the number of seconds of credit which can be added by the user.

8.7.2 For instance, if MAXCRED is set to 1200 (seconds) and TIMECRED is set to 600 (seconds), then a maximum of two cards can be inserted at a time. Another card can only be inserted after the displayed credit falls below 600 seconds.

8.7.3 MAXCRED can be set between zero and 999999seconds.

8.7.4 If accepting credit from a card will cause the credit to exceed MAXCRED, the display shows CREDIT FULL.

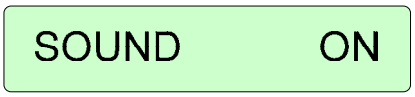
8.8 TIMEWARN

8.8.1 This register shows when consumers will be warned that their credit is running out. For example, if the TIMEWARN is set to provide 60s then a warning sound will be produced by the timer one minute before the credit runs out. This gives consumers a chance to purchase additional credit.

8.8.2 This register is set to 60sec at the time of manufacture. It can be changed by the user (see elsewhere in this section). Range is 0-199 seconds.

8.9 SOUND

8.9.1 This register records whether the timer will sound confirmations when keys are pressed, cards are inserted, or the display shows a message.

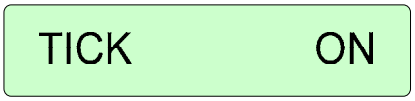


8.9.2 Setting SOUND to OFF automatically sets TICK to OFF.

8.9.3 This register is set to ON at the time of manufacture. It can be changed to OFF by the user (see following section).

8.10 TICK

8.10.1 This register records whether the timer will produce a tick sound each time a second elapses. This can be useful to alert users that the timer has started, and their credit has begun to be used up.



8.10.2 Setting SOUND to off automatically sets TICK to OFF.

8.10.3 This register is set to ON at the time of manufacture. It can be changed to OFF by the user (see following section).

9 VARIABLES

9.1 Introduction

9.1.1 The variables in this section are settable by the user. You will need to have entered the programming mode using the **master programming card**, see the previous section.

9.1.2 Registers which may be adjusted are displayed with a black flashing cursor, at the digit or value position which can be changed.

9.1.3 If a key is not pressed, the CARDtimer will move on to the next settable value after 5 seconds.

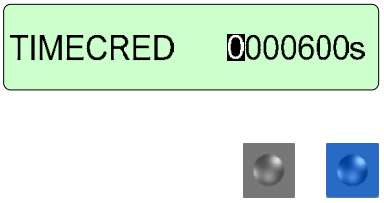
9.1.4 If you change a value, wait for 5 seconds after your last key press. The time will accept you value and move to the next settable value.

9.1.5 If you make a mistake, just let the timer step through all the settable values, and then start again, by inserting the **master programming card** again.

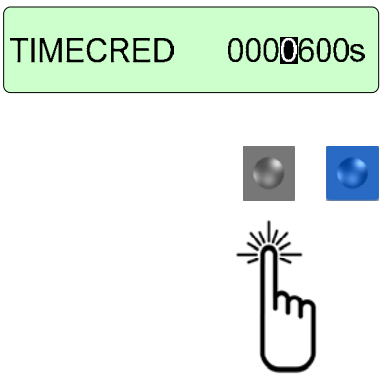
9.2 Example of Changing a Register

9.2.1 The TIMECRED register shows the number of seconds that will purchased by consumers for each insertion of a card. For example, if you want to provide 25 minutes for each insertion of a card (1500 seconds), then set this value to TIMECRED 1500s.

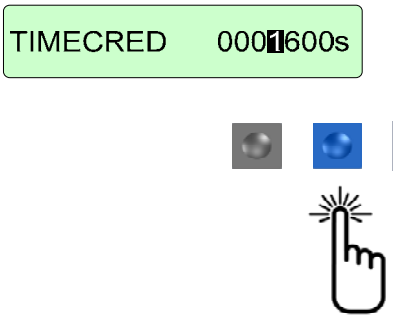
9.2.2 The display will show the present value, with a flashing cursor.



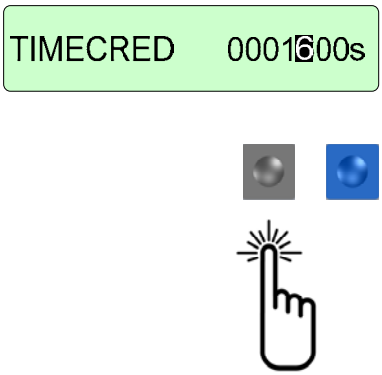
9.2.3 Use the grey button to move the cursor under the digit you wish to change.



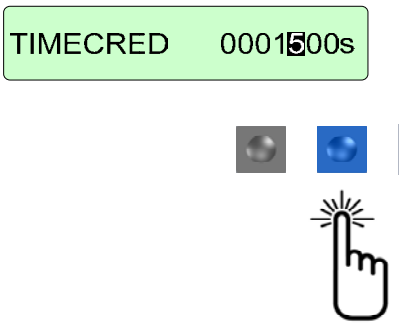
9.2.4 Press the blue button to change the digit value.



9.2.5 Press the grey button to move on to the next digit.



9.2.6 To change the digit to a 5, press the blue button repeatedly until 9 shows, and then continue pressing and the value step through 0, and count up to 5.



9.2.7 The value is now changed to 1500s, wait 5 seconds and the timer will move on to the next settable value.

9.2.8 If you have made a mistake, then wait until the PROGRAMMING DONE message has displayed, and then start again inserting the master programming card.

9.3 Completing Programming

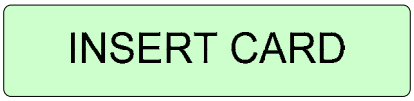
9.3.1 Finally, after the opportunity to change any of the variables, the timer will display PROGRAMMING DONE and then revert to the timer function.

10 USER INSTRUCTIONS

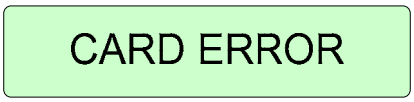
10.1 Introduction

10.1.1 The CARDtimer provides electricity for a set amount of time whenever a card is inserted.

10.1.2 A card can be inserted whenever “INSERT CARD” is displayed, or when the timer is counting down.



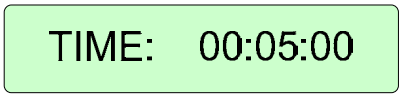
10.1.3 Each card needs to be inserted in one smooth action. If the card is inserted too fast, or too slowly, then the timer will display “CARD ERROR”.



10.1.4 If this happens, wait for the timer to display “INSERT CARD” and then try again.

10.1.5 If you insert a card which has previously been used, the card will be ignored.

10.1.6 When you have successfully inserted the card, credit will be added to the timer, and the countdown will begin. The red light on the front of the timer will light.



10.1.7 When the time is nearly elapsed, the timer may make a warning sound, and then the electricity will be cut off. The red light on the front of the timer will go out.

10.1.8 You can insert another card at any time to extend the amount of time purchased.

10.1.9 If you have card problems, the meter owner can interrogate internal registers of the meter to determine what cards have been inserted and if any issues have been encountered in processing your cards.